

## NATURAL RESOURCES CONSERVATION SERVICE

### CONSERVATION PRACTICE STANDARD

# STRIPCROPPING

(Acres)

CODE 585

#### DEFINITION

Growing planned rotations of erosion-resistant and erosion susceptible crops or fallow in a systematic arrangement of strips across a field.

#### PURPOSES

This practice supports one or more of the following purposes:

- Reduce water erosion – Resource Concern (SOIL EROSION - Sheet, rill, & wind erosion)
- Reduce wind erosion – Resource Concern (SOIL EROSION - Sheet, rill, & wind erosion)
- Reduce the transport of sediment and other water and wind borne contaminants – Resource Concerns (Excess nutrients in surface and ground waters and WATER QUALITY DEGRADATION – Pesticides transported to surface and ground waters)
- Protect growing crops from damage by wind-borne soil particles – Resource Concern (DEGRADED PLANT CONDITION – Undesirable plant productivity and health).

#### CONDITIONS WHERE PRACTICE APPLIES

This practice applies on cropland.

#### CRITERIA

##### General Criteria Applicable to All Purposes

Use of this standard requires compliance with all applicable federal, state, and local laws and regulations.

Arrangement and Vegetative Condition of Strips. Strips of crops susceptible to erosion will be alternated with strips of erosion-resistant crops or cover. The orientation will be at angles as close as practical to perpendicular to the critical wind and water erosion vectors.

**Strip Width.** Strip width will be determined by the current erosion prediction tool. Strip widths will be multiples of the width of the planting equipment. Predictions will account for the effects of other practices in the conservation management system.

**Vegetative Cover.** Vegetation in a strip cropping arrangement will consist of crops, forages, specialty crops, or cover crops grown in a planned rotation. At least 50% of the rotation will consist of erosion resistant crops or sediment trapping cover in any given year. Erosion resistant strips will consist of vegetation that reduces erosion to the planned conservation objective. No two adjacent strips will be in an erosion-susceptible condition at the same time during the year. However, two adjacent strips may be in erosion-resistant cover at the same time.

The designed crop rotation will be followed on each adjacent strip while the point or year in the sequence of the rotation is staggered or offset to achieve the desired conservation planning objective.

A vegetative cover will be selected that will tolerate the anticipated depth of sediment deposition.

Acceptable cover is specified by each specific purpose as stated below.

**Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service State Office, or download it from the Field Office Technical Guide for your State.**

### **Additional Criteria to Reduce Water Erosion and Associated Transport of Sediment and Other Water-borne Contaminants**

**Number of Strips.** A strip cropping system will consist of two or more strips within the conservation planning slope length or “L”.

**Alignment of Strips.** Strip boundaries will run parallel to each other and as close to the contour as practical.

**Strip Width.** The width of a strip will not exceed the critical slope length for contouring.

If a correction strip is required, that strip may vary in width but will be no narrower than the widest working field implement used to traverse the strip.

Where field contours become too sharp to keep machinery aligned with the contour during field operations, establish sod turn-strips on sharp ridge points and or valleys. These strips will be wide enough to allow the equipment to be lifted and/or turned and meet the same rows across the turn strip.

**Minimum Row Grade.** Row grades for soils with slow to very slow infiltration rates (soil hydrologic groups C or D), or for crops sensitive to ponded water conditions for periods of less than 48 hours, will be designed with positive row drainage of not less than 0.2 percent on slopes where ponding is a concern.

**Maximum Row Grade** The maximum row grade will not exceed one-half of the up-and-down hill slope percent used for conservation planning, with a maximum of 4 percent row grade.

Up to a 25% deviation from the design row grade is permitted within 150 feet of a stable outlet.

When the row grade reaches the maximum allowable design grade, a new baseline (key line) will be established up or down slope from the last contour line and used for layout of the next contour pattern.

**Headlands/End Rows:** On fields where row crops and tillage are a part of the rotation, headlands/end rows with a slope steeper than the maximum allowable row grade for that field will be maintained in permanent sod.

### **Additional Criteria to Reduce Wind Erosion and Associated Transport of Sediment and Other Wind Borne Contaminants**

**Number of Strips** A strip cropping system will consist of two or more strips within the entire area prone to wind erosion.

**Alignment of Strips.** Strip boundaries will run parallel to each other.

**Orientation.** Strips will be oriented as close to perpendicular to the critical wind erosion direction for the susceptible period as practical

**Width of Strips.** The effective width of strips will be measured along the prevailing wind erosion direction for those periods when wind erosion is expected to occur and for which the system is designed.

When the orientation of erosion-susceptible strips deviates from perpendicular to the prevailing wind erosion direction, the width of these strips will be correspondingly adjusted using current wind erosion prediction technology.

### **Additional Criteria to Protect Growing Crops from Damage by Wind-borne Soil Particles**

**Strip width.** The effective width will be measured along the prevailing wind erosion direction during those periods when sensitive crops are susceptible to damage by wind-borne soil particles.

The width of strips will not exceed the width permitted by the crop tolerance to wind erosion during specific crop stage periods, using current wind erosion prediction technology. Refer to the crop tolerances to wind in the National Agronomy Manual, other accepted technical references, or other planned crop protection objectives.

When the orientation of erosion-susceptible strips deviates from perpendicular to the prevailing wind erosion direction, the width of these strips will be correspondingly adjusted using current wind erosion prediction technology.

**Number of Strips.** A strip cropping system will consist of two or more strips within the entire area susceptible to wind erosion.

**Alignment of Strips.** Strip boundaries will run parallel to each other.

**Orientation of Strips:** Strips will be oriented as close to perpendicular to the prevailing wind

erosion direction for the susceptible period as practical.

## CONSIDERATIONS

Strip cropping may need to be used in combination with other conservation practices to meet the goals of the resource management system.

To improve cropping system diversity and associated benefits, consider a crop rotation at least three years in length including at least three crop species from different plant families.

Wildlife benefits can be enhanced by selecting species and management practices that provide habitat for pollinators, wildlife, and or desired organisms.

Strips are often the only wildlife habitat opportunity within intensively-cropped areas. The habitat for wildlife, pollinator, and other beneficial insects can be enhanced by:

- Where site appropriate, use native grass species that fulfill the purposes of the practice while also providing habitat for priority wildlife.
- Adding herbaceous plant species including native forbs to strips that are beneficial to wildlife and pollinators and be compatible for one of the listed purposes and from the Indiana (IN) Field Office Technical Guide (FOTG) Standard (645) Upland Wildlife Habitat Management. Changing the seeding mix should not detract from the purpose for which the strip was established.
- Increasing the width beyond the minimum required. This additional area can increase food and cover for wildlife and pollinators.
- Management activities on the strip should be completed outside of April 1 – August 1 to minimize impacts to ground-nesting wildlife. Activities should be timed to allow for regrowth before the growing season ends whenever possible.

Consider delaying mowing on sod turn-strips until after the nesting season.

To capture and manage soil moisture, select crops, crop sequence, and varieties with sufficient density and cover to intercept runoff and/or blowing snow. Manage the height of standing residues to maximize snow trapping potential,

Stripcropping can reduce airborne particulate matter (PM) emissions.

The conservation crop rotation on stripcropped fields should be consistent with the farm enterprise crop mix and/or associated livestock operation. These will influence the proportion of row crops, close growing crops, specialty crops, cover crops, and grass/legume forage crops.

Prior to design and layout, obstruction removal or changes in field boundaries or shape should be considered, where feasible, to improve the effectiveness of the practice and the ease of performing field operations across the slope.

Prior to layout, inspect the field to find key points for commencing layout or getting a full strip width to pass by an obstruction or ridge saddle. Whenever possible, run the strip boundary parallel with fence lines or other barriers, as long as row gradient criteria are met. Account for access road widths when they must cross the field, and adjust the strip boundary on either side accordingly.

When this practice is used in combination with diversions or terraces coordinate the strip layout with the diversion or terrace grade and spacing so that strip boundaries will parallel terraces wherever possible within the criteria for row grade. Where grass-back or narrow-base terraces are used, allow for the uncropped width along the terrace so that the same strip width is maintained for all strips in the field.

Stable outlets may be necessary where runoff results in concentrated flow erosion. Acceptable stable outlets include grassed waterways, field borders, filter strips, water and sediment control basins, or underground outlets for terraces and diversions.

When the erosion-resistant strip is living vegetation, the species established on non-organic operations, should either be tolerant to herbicides used on the cropped strips or protected from damage by herbicides used on the cropped strips.

## PLANS AND SPECIFICATIONS

Specifications for installation and maintenance of Stripcropping will be prepared for each field or treatment unit according to the Criteria described in this standard.

Specifications pertaining to implementation will be recorded on Implementation Requirements documents.

## OPERATION AND MAINTENANCE

Sediment accumulations along strip edges will be smoothed or removed and distributed over the field as necessary to maintain practice effectiveness.

Mow sod turn-strips at least once a year.  
Harvesting is optional.

Erosion-resistant strips in rotation will be managed to maintain the planned vegetative cover and surface roughness.

If the strip alignment is lost due to adjacent strips being in hay or permanent cover, the original strip alignment and width will be re-established as needed.

## REFERENCES

Foster, G.R. 2004. Draft reference guide, Revised Universal Soil Loss Equation Version 2, (RUSLE2). National Sedimentation Laboratory, Oxford, MS.

Foster, G.R. 2005. Draft science documentation, Revised Universal Soil Loss Equation Version 2, (RUSLE2). National Sedimentation Laboratory, Oxford, MS.

Renard, K.G., G.R. Foster, G.A. Weesies, D.K. McCool, and D.C. Yoder, Coordinators. 1997. Predicting soil erosion by water: A guide to conservation planning with the Revised Universal Soil Loss Equation (RUSLE). U.S. Department of Agriculture, Agriculture Handbook No. 703.

USDA, ARS. 2006. The wind erosion prediction system, (WEPS ver. 1.2.9), User Manual, 2011 Wind Erosion Research Unit, Manhattan, Kans.

USDA-AMS National Organic Program Final Rule 7 CFR Part 205. <http://www.ams.usda.gov/AMSV1.0/nop>

USDA-AMS National Organic Program National List of Allowed and prohibited Substances. <http://www.ams.usda.gov/AMSV1.0/nop>.